III. REMARKS

Claims 1-8 and 10-20 are pending in this application. By this Amendment, claims 1-8 and 11-19 have been amended, and no claims have been cancelled herein. Applicants do not concede in this application that any claim is not patentable over the art cited by the Examiner, as the present claim amendments are only for facilitating expeditious prosecution of allowable subject matter. Applicants respectfully reserve the right to pursue these and other claims in one or more continuation and/or divisional patent applications. Reconsideration in view of the following remarks is respectfully requested.

Rejections under 35 U.S.C. § 112, First Paragraph

In the Office Action, claims 1-8 and 10-16 are rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement. Specifically, the Office asserts that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey that the inventors had possession of the claimed subject matter at the time the application was filed.

With respect to claim 1, Applicants have amended this claim herein, to recite the features of "A computer-implemented security system for securing an electronic version of a nucleotide chain sequence, comprising: a computer hardware apparatus; and a computer program that, when loaded and executed, controls the computer hardware apparatus such that it carries out..." (claim 1, lines 1-4). No new matter is believed to be added by this amendment, as support for this amendment can be found in the specification as filed in at least [0029]. Applicants have also amended claim 1 to remove the features of "at least one processing unit," "memory operably associated with the at least one processing unit," and "a security system storable in memory and executable by the at least one processing unit," which were noted in the Office Action at pp. 2-3.

With respect to claims 1, 8, and 14, Applicants have further amended these claims to recite "identifying ~~all coding~~ exons and ~~non-coding regions~~ introns in the nucleotide chain sequence." This amendment deletes the "all" noted in the Office Action (p. 3), and substitutes "exons" for "coding [regions]" and "introns" for "non-coding regions." No new matter is believed to be added by these amendments, as support can be found the specification at [0008].

With respect to claims 1 and 14, Applicants have further amended these claims to recite "wherein the encrypted exons <u>are decrypted</u> ~~require decryption~~ by a secure process to ~~recreate~~ <u>regenerate</u> the nucleotide chain sequence." Applicants respectfully submit that this amendment provides improved clarity, and contains no new matter, as support can be found in the specification as filed at [0028] and FIG. 3.

Rejections under 35 U.S.C. § 112, Second Paragraph

In the Office Action, claims 1-7 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the application regards as the invention. Specifically, the Office asserts that the features of "a system for" are vague and indefinite. With regard to this rejection, Applicants respectfully submit that the amendments to claim 1 described above, specifically the feature of "<u>a computer hardware apparatus; and a computer program that, when loaded and executed, controls the computer hardware apparatus such that it carries out</u>" provides improved clarity with regard to the physical structure of the invention claimed herein. These limitations are incorporated by reference into claims 2-7, which depend from claim 1. Accordingly, Applicants respectfully request the withdrawal of the rejections of claims 1-7 under § 112, second paragraph.

Rejections under 35 U.S.C. §§ 102(b) and 103(a)

In the Office Action, claims 1-4, 6-8, 10-12, 14, 15, 17, 18, and 20 are rejected under 35

U.S.C. § 102(b) as being anticipated by Rungsarityotin et al. (Wasinee Rungsarityotin et al., *Grid*

computing and bioinformatics development. A case study on the Oryza sativa *(rice) genome*, 74

PURE APPL. CHEM. 891-97 (2002) (hereinafter, "Rungsarityotin")), with additional support from

the Merriam-Webster online dictionary ("encrypt," "encode," "encipher," and "cipher"); and

claims 1-8 and 10-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over

Rungsarityotin with additional support from the Merriam-Webster online dictionary, in view of

Jorgenson *et al.* (US Pub. No. 2004/0221163 A1).

With respect to the rejection of claim 1 under § 102(b), Applicants have amended this

claim herein to recite the features of identifying "<u>exons</u> and <u>introns</u>" rather than "all coding and

non-coding regions" in the nucleotide chain sequence. Applicants have further amended claim 1

to recite "a computer-implemented security system for securing an electronic version of a

nucleotide chain sequence, <u>wherein the nucleotide chain sequence comprises at least a portion of</u>

<u>a genome of an organism, the system</u> comprising…" No new matter is believed to be added by

either of these amendments, as support may be found in the specification as filed at [0019] and

[0008], respectively, among other passages.

In the Office Action, the Office suggests that "it is possible that the EST or BAC or gene

[taught by Rungsarityotin] can be the actual 'nucleotide chain sequence' since this limitation is

very broad and encompasses all three" (Office Action, p. 12). The Office further notes that

claim 1 fails to "specify how long the electronic version of the sequence must be," and "does not

specify what the original sequence is." Accordingly, as noted above, Applicants have amended

claim 1 to provide further clarity with regard to the character of the nucleotide chain sequence, specifically, that it "comprises at least a portion of a genome of an organism."

As submitted by the Office, Rungsarityotin teaches "exchanging information on a particular gene or coding region (abstract), integrating a physical map of BAC sequence from a rice chromosome (Figure 2), using BAC-end sequences and BAC fingerprint contigs and linking critical regions of interest onto a sequence-ready map (page 894, first paragraph) ... [and] using expressed sequence tags (ESTs) treated as genes and marker names (i.e. AP002882 and RZ69) (in Figure 2 and pages 894, first paragraph) along the sequence with non-coding regions merely listed as a line (Figure 2)." (Office Action, p. 6.) Because expressed sequence tags and bacteria artificial clones are artificial constructs which do not comprise "at least a portion of a genome of an organism," Applicants respectfully submit that Rungsarityotin does not teach or suggest each and every element of the claimed invention.

Applicants further submit that because Rungsarityotin teaches a database containing "the available sequence-ready map, bacteria artificial clone (BAC)-end sequence (BES), and BAC fingerprint contigs (FPC)," in which "BAC genomic sequences from Thai rice are aligned by sequence and marker contents with the corresponding sequence of the Nipponbare strain of rice," using "express sequence tags (ESTs) ... treated as candidate genes," (Rungsarityotin, p. 893-894), Rungsarityotin does not teach "identifying exons and introns in the nucleotide chain sequence," as claimed.

With respect to the rejections of independent claims 8, 14, and 17 under § 102(b), Applicants note that each claim includes features similar in scope to those already addressed above with respect to claim 1, and has been amended analogously. Further, the Office relies on the same arguments and interpretations of Rungsarityotin and the Merriam-Webster Online

Dictionary as discussed above with respect to claim 1. To this extent, Applicants herein incorporate the arguments presented above with respect to claim 1, and respectfully request withdrawal of the rejections of claims 8, 14, and 17 for the above-stated reasons. Accordingly, Applicants respectfully request that the rejections to independent claims 1, 8, 14, and 17 be withdrawn.

With respect to the rejections under § 103(a), Applicants note that the Office relies on the same arguments and interpretations of Rungsarityotin (supported by Merriam-Webster Online Dictionary) as discussed above with respect to the rejections under § 102(b). To this extent, Applicants herein incorporate the arguments presented above with respect to the deficiencies in Rungsarityotin discussed previously. Applicants assert that because the Office relies on Jorgenson strictly for its disclosure of securing transmitting data using an encryption scheme including cipher block chaining, the Jorgenson reference does not overcome the deficiencies in Rungsarityotin. Accordingly, Applicants respectfully request that the rejections to claims 1, 8, 14, and 17 under § 103(a) be withdrawn.

With respect to claims 2-4, 6, 7, 10-12, 15, 18, and 20, Applicants respectfully submit that these claims are allowable for reasons stated above relative to independent claims 1, 8, 14, and 17, as well as for their own additional claimed subject matter. Accordingly, Applicants respectfully request that the Office withdraw the rejections under 35 U.S.C. § 102(b) and § 103(a) to claims 2-4, 6, 7, 10-12, 15, 18, and 20.

IV. CONCLUSION

Applicants respectfully submit that the Application as presented is in condition for allowance. Should the Examiner believe that anything further is necessary in order to place the application in better condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

/ Michael F. Hoffman /

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